

An object moves along a line so that its position at time  $t$  is given by  $s(t) = t^3 - 4t^2 + 4t + 3$  where  $t \geq 0$ .

- a. What is the object's position at time  $t = 3$ ?
- b. What is the object's velocity at time  $t = 3$ ?
- c. What is the object's acceleration at time  $t = 3$ ?
- d. Is the object speeding up or slowing down at  $t = 3$ ? Justify your response.
- e. When is the object at rest?
- f. When is the object moving right?
- g. How far does the object travel in the first 4 seconds?